ETERNAL UNIVERSITY

Synopsis of Thesis Problem of Doctoral Student: Ph.D.

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1. Title

ANALYTICAL STUDY ON HUMAN LABOUR AVAILABILITY AND ITS UTILIZATION PATTERN IN PUNJAB AGRICULTURE

2. Introduction

Agriculture is the backbone of Indian economy and development of agricultural sector is central to all strategies for planned development (Agricultural Finance Corporation, 2005). The seventy five percent of the total work force in the country is dependent upon agricultural sector and all the rural population survives on this sector in one way or the other for their livelihood (Sharma & Singh, 1997). The state of Punjab occupies a special place among Indian States for its outstanding achievements in agricultural sector. There was a big increase in the production of agriculture in the state during the Green Revolution period. The state of Punjab comprises only 1.54 percent of the total geographical area of country whereas its contribution towards the total food grain production of the country is 13-14 percent. Known as 'granary of India', the state has been contributing 35 to 40 per cent of rice and 40 to 75 percent of wheat to the central pool in the past two decades. However, it contributes 42.3 million tonnes of wheat and 31.5 million tonnes of rice (Commission for Agricultural Costs and Prices, 2013). As per the 2011 Census, the population of Punjab is 2.77 crore, constituting 2.29 per cent of the total population of the

country. About two third of the State's population lives in rural areas and a sizeable population of 36 per cent is dependent on agriculture and allied activities for its livelihood. Moreover, at present 82 per cent of the total geographical area is under cultivation and cropping intensity is 191 per cent. Punjab Agriculture is highly intensive in terms of land, capital, energy, nutrients, agriculture inputs, machinery, irrigation and an enthusiastic farming community (NABARD, 2015).

Human labour occupied an important place in increasing the pace of productivity growth. Punjab agriculture is the best example, which adopted both bio-chemical and mechanical technologies in its earlier stages. It was noted that human labours affected not only in terms of magnitude of employment but also in terms of productivity, composition and efficiency (Sain and Singh, 1994)

Green revolution in mid-1960's, transformed the food deficient Indian economy into a food self-sufficient economy. Some states/regions demonstrated an impressive success in the green revolution and Punjab was at the top. There was significant increase in agricultural productivity and production due to large-scale adoption of high-yielding seeds, fertilizers and pesticides, and availability of assured irrigation and market for food grains in the state.This has led to an increase in farm profits, which has encouraged large-scale mechanization of agricultural operations. In the beginning, farm mechanization, by raising cropping intensity and labour-intensive shifts in the crop mix, led to improve efficiency of input-use and employment (Devi *et al.*, 2013).

During the initial phase of green revolution with the rise in demand for labour in the state, agricultural labour from other states of India were attracted towards Punjab. However, the labour absorption capacity of agriculture in Punjab started declining towards the end of eighties. There was a significant decline in crop-sector employment during the 1990s as compared to the 1980s. (Ghuman *et al.*,2007).The per-hectare labour use has declined between 1985-86 and 2006-07 by 23 per cent and drastic decline was noted in the case of dominant crops like wheat and paddy that have experienced large-scale mechanization. However, marginal rise in labour use in cotton cultivation has been recorded. Further, positive effect of agricultural growth on labour use got neutralized due to the displacement of human labour by machines and also due to rising wage rates.The elasticity of labour use in agriculture has decreased drastically during the past two

decades indicating little potential for absorption of additional labour in agriculture. (Devi *et al*., 2013).

2.1 Scope and significance of the study

The available exhaustic research work on human labour use and utilization pattern is based on data of early eighties or before. Thereafter, during the post green revolution period the state agriculture has gone through drastic changes. The economic reforms were initiated during early nineties, which have bearing on the employment perspectives in agriculture also. The present study has been taken to fill the existing research gap with respect to the effects of the post green revolution and post economic reforms changes in human labour availability, demand and productivity of human labour and various socio-economic problems faced by agricultural labour and also to suggest policy measures for mitigating problems faced by human labour.

2.2 Knowledge gaps

The survey of literature revealed that none of the study has been carried to examine the human labour availability in Punjab agriculture and various socio-economic problems faced by agricultural labour in Punjab in the recent past.

2.2 Objectives

Keeping in view the above stated facts, the present study will be undertaken with the following objectives:

i. to examine the human labour availability in Punjab agriculture,

ii. to study the factors affecting demand for human labour in Punjab agriculture,

iii. to examine the extent of labour utilization pattern in different agricultural activities,

iv. to workout the extent of casualization among agricultural labour force in Punjab,

v. to examine the various socio-economic problems faced by agricultural labour in Punjab and,

vi. to suggest policy measures for mitigating problems faced by human labour in Punjab agriculture

3. Hypotheses

i. The labour utilization and its supply have not changed in the state agriculture overtime between the post green revolution period and present.

ii. The Socio-economic characteristics of the labourer do not affect the productivity in the study area.

4. Review of literature

Acharya (1992) studied the labour use in Indian agriculture to identify factors underlying it. The study revealed that labour use varies extensively across crops and states. It was found that hired labour is used more in those crops, which has more operational activities. It was noticed that labour use in agriculture depends upon modernization of agriculture, labour promoting and displacing technologies, natural endowments, wage rates and the locally prevalent farming system. The study highlighted that there is yet a possibility to promote labour use in Indian agriculture by improving land quality through earth works and watershed development, agricultural modernization through irrigation and use of modern inputs and keeping productivity growth in line with wage increases.

Banerjee (1993) investigated the impact of 'New Economic Policy on Agricultural Labour'. It was reported that agricultural labour markets were diversified due to agro-climatic conditions and uneven development of agricultural mode of production. It was recorded that backward regions use traditional techniques of production and also had labour surplus with consequent high intensity of poverty; the hill and dry land zones showed low production, shifting cultivation and denudation of forests, degradation of ecological balance, labour surplus and acute poverty. It was noticed that change in the economic policy for stabilization had not benefited agricultural workers. It was found that the condition of agricultural laborers was deteriorated with the reduction in subsidies for fertilizer and withdrawal of concessional credit.

Kanwar (1995) revealed in the study that in the absence of certain markets such as insurance, futures and capital in less developed agriculture is one of the diverse mechanisms that farm households may employ to hedge against variations in their wage labour supply. It was found that female labour was not so utilized in certain risk prone villages in the Indian semi-arid tracts. The reason for this was to be more of a 'social' than 'economic' nature.

Subrahmanyam (1999) studied the female labour absorption in Andhra Pradesh agriculture. It was found that with the introduction of HYV seeds and mechanization in paddy cultivation, the two opposing forces on labour demand has the net effect of a mild increase in the demand for total labour, but a steep increase in the demand for female labour by 85 per cent. This has increased the share of female labour in rice cultivation from 30 per cent to 47 per cent. All this was possible because mechanization was not introduced in the operations performed by females. The study revealed that the present farming conditions, each hectare of land (net area) generates employment for 137 days of which more than half is for female.

Singh and Chandra (2000) conducted a study on adoption of agricultural inputs and their effect on productivity in Madhya Pradesh. The study revealed that due to the use of mechanical power, average use of human energy in crop production reduced from 541 hours per hectare in 1971-72 to 476 hours per hectare in 1991-92. The use of draught animals in the state has declined from 155 hours to 110 hours per hectare during 1971-72 to 1991-92. The study also revealed that total number of tractors increased at the rate of 13.2 per cent per annum since 1991. The value of standardized regression coefficient based on time series data exhibited that fertilizer was the most important input in determining the level of productivity followed by irrigation and power.

Sidhu and Johl (2001) examined the labour utilization pattern in Punjab agriculture from 1971-72 to 1995-96. Based on the cost of cultivation estimates the labour demand per hectare of net sown area, which was 109 man days in 1971-72, increased to 120 man days in 1985-86 but then decreased to 102 man days in 1995-96. This decreased in use of labour has come about mainly in case of family labour and permanently hired labour. However the use of hired labour increased in 1985-86 but declined in 1995-96. The total labour use per cropped hectare decreased from 77.4 man days in 1971-72 to 55.1 man days in 1995-96. The demand for labour in the crop sector of the state was worked out to be 443.3 million man days in 1971-72, increased to 502.85 million man days in 1985-86 due to increase in cropped area and productivity.

Rangi and Sidhu (2004) studied the impact of new technology on the structure of employment of agricultural labour in Punjab. They analysed the shifting of cropping pattern in Punjab from 1966-67 to 2001-02. The analysis revealed that cereals particularly wheat and rice have come to dominate the cropping pattern in the state and both of these capital intensive crops had changed the structure of labour use. The increased number of tractors in post-green revolution era was also one of the major factors behind the change in structure of employment.

On account of fast farm mechanization, the peak period employment of agricultural labour has reduced significantly. The increased inflow of migrant labour has both positive and negative impact in the state.

Sidhu *et al.* (2005) observed that the farm employment in the crop sector was shrunk whereas migration from other states and growth in rural work force overtime were pushing up the supply of agricultural workers in the state. The absorption of family labour has decreased. Besides falling employment and slowing down in income growth, the cultivated land per agricultural worker reduced, adding to the already high number of small and marginal holding, which were incapable of generating any meaningful capital formation. The authors suggested that diversification of income and employment patterns have become an absolute necessity for further growth of the agriculture sector of Punjab.

Jeromi (2007) made an attempt to examine the extent of the farm crisis, the rise in indebtedness and various dimensions of suicides of farmers in Punjab state. The study revealed that when the landholding size was less than one acre, cultivation was marginally profitable and loss in the case of landholding above one acre, because of hiring of labour. Agricultural crisis was the reason in the case of 38.90 per cent farmers who committed suicide. A majority of farmers nearly 60 per cent who committed suicide had less than one acre land. The study also revealed that the incidence of indebtedness in the rural areas of Punjab state was higher than the national average

Toor *et al.* (2007) reported that the share of agriculture sector in gross state domestic product has declined. The significance of agriculture in terms of its capacity to absorb labour force in adequate number has been declining. It was noticed in the study that there was casualisation of agricultural labour in case of both male and female workers. Major reasons behind casualisation of farm labour in the state have been mechanization of major farm operations, inflow of migrant labour, slowdown of agricultural growth, and non-viability of small and marginal holdings. Further, the use of human labour in the production of wheat, paddy and cotton crops has been declined over a period of time. It was found by the authors that crop diversification policy of the state government has led to better employment in rural areas.

Singh *et al*. (2009) made an attempt to examine the factors influencing economic viability of the marginal and small farmers in Punjab state. Out of the total 240 sampled farmers, the number of viable farmers was 165 (68.75 per cent) and of non-viable farmers were 75 (31.25 per

cent). In the case of marginal farmers, total fixed investment on crops and dairy, off-farm income, value productivity of crops and net income from dairy were calculated to be significant discriminating factors, accounting for 13.72 per cent, 39.71 per cent, 1.27 per cent and 35.52 per cent contributions respectively towards total distance between viable and non-viable farms. However, in the case of small farmers, farm-size, farm income and net income from dairy were the significant discriminating factors with 36.60 per cent, 27.83 per cent and 21.70 per cent contributions respectively towards the discriminating distance between viable and non-viable small farmers in the state.

Sharma and Sidhu (2009) conducted study on farmers, migrant labour and local labour. The study was based on the primary data collected in year 2007 from three district of Punjab state namely Patiala, Sangrur and Hoshiarpur district (Based on study conducted by Sidhu et al. 1997). Out of all, 300 migrants and 60 farmers and local labour were interviewed. The study revealed that in spite of the fast mechanization, demand for labour went up due to expansion of agriculture, which further resulted into migration of labour from other states to Punjab. It was found in the study that for farmers migrant laborers are economically and socially advantageous since migrants agreed to work at lower wages and there was no social obligation on the part of the farmers to help them in times of distress.

Reddy *et al*. (2011) analysed the utilization pattern of human labour over a period of past 28 years (1980-81 to 2006-07) in cotton production in Gujarat. For the purpose of analysistotal period has been divided into three sub-periods: first (1981-82 to 1989- 90), second (1990-91 to 1999-00) and third (2000-01 to 2006-07). Secondary data was collected from Commission of Agricultural Costs and Prices, New Delhi.The study revealed that human labour utilization showed a decreasing trend up to the year 2000-01, after that it started increasing. Further, it was found that the cost of human labour per hectare has shown an increasing trend during the entire period of analysis.During the period of analysis it was noticed that on an average, 111.33 person-days of human labour was utilized per hectare of cotton cultivation and Of this, family labour contributed 48.3 per cent and remaining was the hired labour.

Devi (2012) observed the labour- use pattern in rice farming in Kerala, based on the secondary data for the period of 28 years, from 1980-81 to 2007-08. The labour substitution pattern, gender discrimination, cost structure and efficiency status was analysed in the study. The study reported a steady decline in human labour employment in rice farming. It was suggested in

the study that labours substitution with technologies like machines and agro-chemicals. Whereas, mechanization is being accepted gradually but agro-chemicals (weedicides) cannot be favored due to social and ecological reasons. It was found that the nominal wage rates and human labour cost had increased over the years though the trend in real wages is not attractive from a supply-side angle.

Devi *et al*. (2013) studied the dynamics of labour demand and data for the study was taken from the Comprehensive Scheme to study the cost of cultivation of principal crops in Punjab for 1985-86 and 2006-07. The study revealed that the use of human labour on Punjab farms has declined by about 23 per cent from 1089 man-hours/ha in 1985-86 to 840 man-hours/ha in 2006-07. It was found in the study that dominant crops like wheat and paddy have experienced large scale mechanization, in which wheat and paddy had together accounted for about 52 per cent of the gross cropped area in 1985-86, which further increased to 73 per cent in 2006-07. However, increase in labour use in cotton cultivation was only marginal. The positive effect of agricultural growth on labour use has got neutralized due to the significant displacement of human labour by machines and also due to rising wage rates.

Reddy *et al*. (2014) analysed the trends in cost of cultivation, profitability, labour use (casual labour and family labour) and machine use for five major crops paddy, wheat, cotton, sugarcane and chickpea across the major states. The data for the study collected from comprehensive cost of cultivation scheme for the period 1997 to 2010. The study revealed that farm mechanization which was started from Punjab and Haryana, and spread to other states, has increased labour productivity significantly when compared to land productivity. It was found that the share of casual labour in states like Andhra Pradesh, Karnataka, Tamil Nadu, Bihar, Maharashtra, Punjab, Gujarat and Haryana has increased. However, in most of the crops in Orissa, West Bengal and in some crops in Uttar Pradesh, Madhya Pradesh and Rajasthan still the share of family labour is high with low level of farm mechanization and less labour productivity which reflect the prevalence of subsistence agriculture.

5. Technical Programme of work

5.1 Name of the experiment

An analytical study into human labour availability and its utilization pattern in Punjab agriculture

5.2 Location / place of work

The place of work will be Eternal University, Sirmour (Himachal Pradesh).

5.3 Methodology

UNIVERSE OF STUDY: The present study will be conducted in the Punjab state. Punjab is divided into three broad zones i.e. Central zone, Sub-mountainous zone and South-western Zone, on the basis of agro-climatic conditions. The Central zone comprised of Amritsar, Moga, Kapurthala, Jalandhar and Ludhiana; and parts of Gurdaspur, Hoshiarpur, Fatehgarh Sahib, NawanShahar, Patiala and Sangrur district. The Submountainous zone comprised of Rupnagar; Shivalik ranges of Gurdaspur and Hoshiarpur; and parts of Fatehgarh Sahib, NawanShahar and Patiala districts. The South-western zone consisted of Ferozepur, Bathinda, Mansa, Faridkot and Muktsar; and parts of Patiala and Sangrur districts.

SAMPLING: Multi-stage random sampling technique will be adopted to select the primary sampling units' viz. sample households, in order to achieve the stipulated objectives. At the first stage, one district each from the three broad agro-climatic zones will be selected. As such, one district each from Central zone, Sub-mountainous zone and from the south-western zone will be selected. Hereafter, Central, Sub-mountainous and south-western zones will be referred as zone-I, II and III respectively. At the second stage, two blocks from each district will be randomly selected. At the next stage, two villages each will be selected at random from the sample block.

In the selected villages an appropriate percentage of sample will be drawn randomly from each village giving proportional representation to the cultivators (Small, medium and large) and agricultural labourer.

5.4 Observations to be recorded

The required data for the present study will be collected from the primary and secondary sources. The primary data and other relevant information will be collected from the selected sample farmers and labourer with the help of pre-tested well-structure schedule through personal interview. Data on demographic characteristics like age, economic status, family size, educational level, income, etc. will be collected.

The secondary sources such as Statistical Abstract of Punjab, Economic Survey of Punjab, Internet, Research Reports, Census of India, Directorate of Economics and Statistics,

Indian Labour Statistics etc. The relevant secondary data regarding the composition and workers of Punjab will be collected.

5.5 Statistical Analysis

In order to achieve the stipulated objectives of the present study suitable statistical techniques will be used such as regression analysis, mean, percentage, coefficient of variation, standard deviation, etc.

6. Collaboration with other departments: Nil

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(Signature of the student)